COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Blue Ridge Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Morgan Lumber Company, Inc.
Red Oak, Charlotte County, Virginia
Permit No. BRRO-30996

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Morgan Lumber Company, Inc. has applied for a Title V Operating Permit for its Red Oak facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Permit Writer/Contact: Keith Sandifer Date:
(434)-582-6232

Air Permit Manager: David J. Brown Date:

Regional Director: Robert J. Weld Date:

FACILITY INFORMATION

Morgan Lumber Company, Inc.
P. O. Box 25
Red Oak, Virginia 23964

Facility
Morgan Lumber Company, Inc.
628 Jeb Stuart Highway
Red Oak, Virginia 23964

County-Plant Identification Number: 51- 037-00023

SOURCE DESCRIPTION

NAICS Code: 32192 - Special Products Sawmill
Morgan Lumber Company, Inc. operates a lumber mill and dry kiln operation. The facility manufactures lumber from southern yellow pine and operates a sawmill, a green wood-fired gasifier boiler that supplies steam to a batch lumber kiln, a green wood-fired burner supplying hot gases to a continuous lumber kiln, and a dry wood-fired burner supplying hot gases to a rotary shavings dryer.

The facility is a Title V major source of VOCs. This source is located in an attainment area for all pollutants, and is a PSD minor source. The facility is currently permitted under a Minor NSR Permit issued on August 16, 2010. The facility notified the DEQ that the continuous kiln started up on December 13, 2010. With installation of the continuous kiln, the facility became subject to Title V and a Title V application was submitted to the DEQ on August 10, 2011.

COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit, was conducted on June 30, 2011. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

See Section II of the permit.

EMISSIONS INVENTORY

A copy of the 2010 annual emission update is attached. Emissions are summarized in the following tables.

2010 Actual Emissions

	2010 Criteria Pollutant Emission in Tons/Year				
Emission Unit	VOC	CO	SO_2	PM_{10}	NO_x
Boiler (ES-1)	0.8	28.2	1.2	14.2	10.4
Log shaving and drying (ES-3&ES-4)	7.7	3.5	NA	2.4	2.0
Batch Kiln (ES-2)	50.9	0	NA	NA	NA
Continuous Kiln (ES-5/ES-6)	0	0	0	0	0
Total	59.4	31.7	1.2	16.6	12.4

2010 Facility Hazardous Air Pollutant Emissions

Pollutant	2010 Hazardous Air Pollutant Emission in Tons/Yr
Acetaldehyde	0.3
Acrolen	0.4
Formaldehyde	0.6
Hydrogen Chloride	1.2
Methanol	0.3

EMISSION UNIT APPLICABLE REQUIREMENTS - Superior Boiler Works boiler (ES-1)

Limitations

The green wood fired 20 MMBtu/hr Superior Boiler Works boiler (ES-1) is a Converta Kiln, Inc. gasifier with a Superior boiler, with an in stack cyclone, is subject to an NSR permit issued November 25, 1997, as amended May 22, 1998, January 4, 2010, and August 16, 2010. Particulate collected from the cyclone is returned to the burner.

The boiler is subject to NSPS Subpart Dc but because it has maximum rated heat input of less than 30 MMBtu/hr, NSPS requirements are limited to initial notification (which has already been completed and streamlined from the Title V permit) and recordkeeping for fuel consumption.

The Title V permit includes the following:

Condition III.A.1. specifies that the particulate emissions from the boiler shall be controlled by a mechanical control device. The control device shall be provided with adequate access for inspection and shall be in operation when the boiler is operating (from Condition 2 of the current Minor NSR Permit issued on August 16, 2010).

Condition III.A.2 states the approved fuel is sawdust, excluding any wood which contains chemical treatments or has affixed thereto paint and/or finishing material or paper or plastic laminates. Also requires the transportation of the sawdust that the boiler burns be transported from the sawmill to the boiler silo by means of a trailer (from Condition 8 of the current Minor NSR Permit issued on August 16, 2010). The sawdust is put in the silo by a bucket ladder, so there are no emissions from the sawdust silo.

Condition III.A.3. limits the amount of sawdust consumption per year (from Condition 9 of the current Minor NSR Permit issued on August 16, 2010).

Condition III.A.5. states the emission limits from the operation of the boiler (ES-1) (from Condition 5 of the current Minor NSR Permit issued on August 16, 2010).

The hourly and annual particulate matter emissions limits for the boiler (ES-1) represent state BACT. AP-42 emission factors for burning wood waste (SCC 10200903) were used for the NSR permit (with the exception of CO which was based on stack test data submitted with the application for the boiler). PM emissions from the boiler are controlled by an in-stack cyclone which is guaranteed to meet 0.3 lb/MMBtu.

The boiler has a permitted (January 4, 2010) limit of 13,000 tons/yr, calculated monthly, of sawdust combustion. The sawdust has a Btu rating of 4500 Btu/lb. The calculation of PM emissions is based on sawdust combustion and the emissions factor of 0.3 lb/MMBtu (from January 4, 2010 permit which was based on AP 42 Table 1.6 [9/03)]).

To calculate emissions from sawdust combustion:

PM/PM10 Emissions (tons) = (tons of sawdust burned) X (2000 lb/ton) X (4,500 Btu/lb) X (0.3 lb/MMBtu) / (1,000,000 Btu/MMBtu) / (2000 lb/ton)

or

PM/PM10 Emissions (tons) = (tons of sawdust burned) X 0.00135 lb/ton

The fuel (sawdust) is fed to a Converta Kiln, Inc. gasifier which feeds to the Superior boiler, so emissions are minimized over a strictly wood-fired boiler. Monitoring for proper operation and maintenance of the boiler and controls, combined with periodic monitoring for visible emissions, is considered to be adequate periodic monitoring of PM emissions from the boiler (ES-1).

Condition III.A.6. limits the boiler opacity to 20 percent except during one-six minute period in any one hour in which visible emissions shall not exceed 27 percent opacity. This condition applies at all times except during startup, shutdown, and malfunction (from Condition 16 of the current Minor NSR Permit issued on August 16, 2010).

Condition III.A.7 states that the boiler emissions shall be controlled by proper operation and maintenance. Boiler operators shall be trained in the proper operation of all such equipment. Records of the training are required. The permittee shall have available good written operating procedures and a maintenance schedule for the boiler and air pollution control equipment. All records required by this condition shall be kept on site and made available for inspection by the DEQ. This condition is from Condition 21 of the current Minor NSR Permit issued on August 16, 2010.

Monitoring and Recordkeeping

Condition III.B.1. requires that an annual internal inspection shall be conducted on the boiler (ES-1) in-stack cyclone by the permittee to ensure structural integrity. This condition confirms the structural integrity of the in-stack cyclone.

Condition III.B.2. contains the periodic monitoring for opacity from the boiler (ES-1) and is based on observation of the presence or absence of visible emissions. Opacity is an indicator of performance. As long as the boiler performs as designed with minimal VE, it would be expected that the emissions are within the emission limits. In the event visible emissions are observed, corrective action is required, or VEEs as determined by EPA Method 9 are required to demonstrate compliance with the applicable opacity standard. A boiler stack observation log for the boiler is required to demonstrate compliance.

The permit also contains limits for CO, SO_2, VOC and NOx. These limits were established in accordance with agency practice of establishing emission limits for any criteria pollutant expected to be emitted at a level greater than 0.5 tpy. Although the emission limits are established as BACT they are primarily used for emission inventory purposes and conservative emission factors were used to establish the limits. Monitoring of fuel burned as well as proper operation and maintenance of the boiler is considered sufficient monitoring for demonstrating compliance with the limits included in this permit.

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include:

Condition III.C. requires records of annual consumption of sawdust (for the calculation of emissions), scheduled and unscheduled maintenance, operator training, records of inspections of the boiler in-stack cyclone, and monitoring records.

Testing
The permit does not require source tests. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Testing/monitoring ports are required.

Reporting

Condition III.E. contains the reporting requirements for the boiler. This includes the monitoring and deviation requirements,

MACT Requirements
Except where this permit is more restrictive, boiler (ES-1) shall comply with requirements of 40 CFR 63 Subpart JJJJJJ (National Emissions Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boiler Area Sources) for existing biomass-fired boilers with a capacity greater than 10 MMBtu/hr but less than 30 MMBtu/hr. On December 23, 2011 EPA proposed changes to Subpart JJJJJJ, in a reconsideration of the final rule.

Condition IV.A. incorporates the compliance date requirements from Subpart JJJJJJ.

Condition IV.B. incorporates the emissions and operations requirement from Subpart JJJJJJ.

Condition IV.C. incorporates the general compliance requirements from Subpart JJJJJJ.

Condition IV.D. incorporates the initial compliance requirements from Subpart JJJJJJ.

Condition IV.E. incorporates continuous compliance requirements from Subpart JJJJJJ.

Condition IV.F. incorporates other requirements from Subpart JJJJJJ (including General Provisions).

EMISSION UNIT APPLICABLE REQUIREMENTS - Log Shaving and Drying ES-3 & ES-4

Limitations

Condition V.A.1. limits the production of dried wood shavings to 12,000 oven-dry tons per years (from Condition 4 of the August 16, 2010 Permit).

Condition V.A.2. limits the approved fuel to wood shavings and fines from the collection of wood shaving (from Condition 7 of the August 16, 2010 Permit.

Condition V.A.3. limits the opacity to not exceed 5% opacity as BACT (from Condition 16 of the August 16, 2010 Permit).

Condition V.A.4. limits the emissions from the operation of the wood shaving and drying system. VOC and PM/PM10 limits were state BACT limits. By agency convention the NOx and CO limits were included in the NSR permit primarily for emissions inventory. The emission factors for NOx and PM came from AP-42 Chapter 10.6.1 dated 3/2002, Tables 10.6.1-1, 10.6.1-2, 10.6.1-3 for rotary dryer, direct-fired, drying softwood, uncontrolled.

The following emissions factors were used:

Pollutant	Emission Factors lb/ODT[1]
PM	5.6
PM-10[4]	0.81
NO_X[3]	0.70
CO[4]	1.19
VOC[4]	2.61

1 - Pounds of pollutant per Oven Dried Ton
3 - AP-42 emission factor includes combustion emissions (Table 10.6.1-2).
4 - Emission factor from stack test at Royal Wood Shaving in New York.

Since there is a cyclone material recovery device for the shavings, it is considered that the actual PM emissions are significantly less than the emission factor used in the permit. The emission factors for PM10, CO, and VOC were developed from a stack test on a similar unit using wood similar to southern pine.

Emissions calculations are based on the following formula.
Emissions (tons) = (tons of oven dried shavings) X (emission factor) / (2000 lb/ton)

The stationary source does not have the potential to emit 10 tons or more of any single HAP or 25 tons or more of any combination of HAPs and is not subject to any current major source MACT1. The Plywood and Composite Wood Products MACT (Subpart DDDD) only applies to major sources of HAPs and the drying system is not an affected facility.

Monitoring

Condition V.B.2. contains the periodic monitoring for opacity from the wood shaving and drying system and is based on observation of the presence or absence of visible emissions. In the event visible emissions are observed, corrective action is required, or VEEs as determined by EPA Method 9 are required to demonstrate compliance with the applicable opacity standard. The wood shaving and drying system (Ref. ES-3, ES-4) stack (EP-4) observation log is required to demonstrate compliance.
The PM10, CO and VOC emission factors were developed from a stack test. Operator training, proper maintenance, opacity monitoring, and throughput recordkeeping is considered sufficient monitoring for this process. Opacity is an indicator of performance. As long as the unit performs as designed with minimal VE, it would be expected that the emissions are within the emission limits.

Recordkeeping

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include annual production of shavings, calculated monthly as the sum of each consecutive 12-month period and scheduled and unscheduled maintenance and operator training (from Condition 17 of the August 16, 2010 Permit).

1 See source supplied spreadsheet Attachment C 7-20-10 Corrected Morgan Air_Permit_Calcs_6-10_65MBF.xls Tab Emission Totals cells E82 and E83 from the application for the August 6, 2010 permit.

Testing

The permit does not require source tests. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard. Testing/monitoring ports are required when requested at the appropriate locations and safe sampling platforms and access shall be provided.

Reporting

The "Recordkeeping and Reporting" requirements of the Title V General Conditions apply to the wood shaving and drying system

EMISSION UNIT APPLICABLE REQUIREMENTS - Kilns ES-2 and ES-5/ES-6

Limitations

Conditions VI.A.1 and 2 limit the amount of lumber that the kilns are permitted to process per year.

Condition VI.A.3 states the approved fuel for the continuous dry kiln (Ref. ES-5/ES-6) as sawdust, excluding any wood which contains chemical treatments of has affixed thereto paint and/or finishing material or paper or plastic laminates. The batch kiln (ES-2) uses steam from boiler (ES-1) to dry the wood.

Condition s VI.A.4 and 5 limit the VOC emissions from the kilns (ES-2 and ES-5/ES-6).

For the batch kiln (ES-2), the allowable emissions were calculated using information for the VOC emission factor from NCASI Technical Bulletin 845, the August 17, 2006 permit issued to Arbor Tech (31039), and DEQ Guidance Document APG-573, dated September 2010 (attached). The emission factor of 4.09 converted from VOC as pinene to VOC as propane for this kiln is 4.063lb/Mbf.

The emissions are calculated as follows:

VOC as propane (tons) – (1000 board feet) X (4.063 lb/Mbf) / (2000 lb/ton)

Kiln (ES-5/ES-6) is a direct wood-fired continuous kiln. For the VOC emissions, based on the fact there are VOC emissions from the wood combustion, an adjustment of 6% was added to the batch kiln emission factor. This will account for the VOC emissions from the wood combustion for the calculation of VOC emissions as propane from the continuous kiln. The emission factor determined for VOC as propane for this kiln is 4.31 lb/Mbft (4.063 + 6% X 4.063).

VOC emissions (as propane) = (1000 board feet) X 4.31 lb/Mbft / 2000 lb/ton

Since the continuous kiln is a direct wood-fired kiln, there are no expected PM/PM10 emissions because the burner is in the center of the 166 foot length of the kiln, there is no discharge except at the ends, and any particulates generated by the burner would have to travel the 80 feet horizontal through a water saturated atmosphere where condensation is occurring continuously.

The source does not have the potential to emit 10 tons or more of any single HAP or 25 tons or more of any combination of HAPs and is not subject to any current major source MACT (see footnote 1). The Plywood and Composite Wood Products MACT (Subpart DDDD) only applies to major sources of HAPs and the kilns are not affected facilities.

Condition VI.A.6 limits the opacity to 20% except during one six-minute period in any one hour in which visible emissions shall not exceed 30% opacity. This requirement is from the new source standard for visible emissions.

Monitoring

Condition VI.B. states the monitoring requirements for visible emissions.
Periodic monitoring requirements for opacity from the dry (lumber) kilns ES-2 and ES-5/ES-6 are based on observation of the presence or absence of visible emissions. In the event visible emissions are observed, a VEE as determined by EPA Method 9 is required to demonstrate compliance with the applicable opacity limit.

Because the kilns are a major source of VOC and methanol emissions are near the major source threshold, consideration was given to whether performance testing for VOC and /or methanol emissions is warranted. The emission limits are representative of PTE at the allowed throughput.. Recordkeeping of throughput and calculation of emissions are selected as appropriate periodic monitoring for methanol and VOC emissions from the kilns for the following reasons:

1. Emission factors for this facility have been specifically selected for similarity to this source.
2. It is questionable whether performance testing would provide results of better accuracy than the selected emission factors

Recordkeeping

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include:

1 Annual production of lumber dried in each kiln.
2 Visible emissions logs to show compliance with the periodic monitoring requirements.
3 Scheduled and unscheduled maintenance and operator training.

Testing

Testing/monitoring ports are required upon request.
The permit does not require source tests. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

The “Recordkeeping and Reporting” requirements of the Title V General Conditions apply to the dry (lumber) kilns ES-2 and ES-5/ES-6.

Streamlined Requirements

None

Facility Wide Conditions

The following applicable requirements for the facility are carried forward from the August 16, 2010 permit into the Title V permit:

1. The department may require the facility to reduce operations as necessary to avoid violating a primary ambient air standard.
2. Minimum maintenance/Operating procedures are specified.
3. Requirement to control dust at the facility.

Compliance Assurance Monitoring (CAM)

CAM applies to an emission unit if that unit (1) has the potential to emit (in the absence of add-on controls) a regulated pollutant in an amount that exceeds its major source threshold, (2) is subject to an emission limitation for that pollutant, and (3) uses a control device to achieve compliance with the emission limitation.

The uncontrolled emission rate for PM (i.e., the only pollutant for which add-on control is required) from the wood-fired boiler (ES-1) is less than the major source threshold of 100 tons / year. The log shaving and drying system (ES-3 & ES-4) and the kilns (ES-2 and ES-5/ES-6) do not use add-on emissions controls. Therefore, none of the emission units ES-1, ES-3 & ES-4, ES-2, and ES-5/ES-6 are subject to CAM.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

Comments on General Conditions

B. Permit Expiration

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §2.2-604 and §10.1-1185 of the *Code of Virginia*, and the "Department of Environmental Quality Agency Policy Statement No. 2-09".

This general condition cite(s) the Article(s) that follow(s):
Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Operating Permits for Stationary Sources

F. Failure/Malfunction Reporting

Section 9 VAC 5-20-180 requires malfunction and excess emission reporting within four hours of discovery. Section 9 VAC 5-80-250 of the Title V regulations also requires malfunction reporting; however, reporting is required within two days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to section 9 VAC 5-20-180 including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations. Title V facilities are subject to both sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within four daytime business hours of discovery of the malfunction.

J. Permit Modification

This general condition cites the sections that follow:
9 VAC 5-80-50. Applicability, Federal Operating Permit For Stationary Sources
9 VAC 5-80-190. Changes to Permits.
9 VAC 5-80-260. Enforcement.
9 VAC 5-80-1100. Applicability, Permits For New and Modified Stationary Sources
9 VAC 5-80-1605. Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas
9 VAC 5-80-2000. Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

U. Malfunction as an Affirmative Defense

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in sections 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F. For further explanation see the comments on general condition F.

This general condition cites the sections that follow:
9 VAC 5-20-180. Facility and Control Equipment Maintenance or Malfunction
9 VAC 5-80-110. Permit Content

FUTURE APPLICABLE REQUIREMENTS

None at this time.

INAPPLICABLE REQUIREMENTS

MACT DDDD
40 CFR 63 Subpart DDDD, National Emission Standards for Hazardous Air Pollutant (NESHAP) for Plywood and Composite Wood Products regulates emissions from lumber drying kilns at major sources; however, since Morgan Lumber is not a major source of HAP, Kilns ES-2 and ES-5/ES-6 are not subject to this standard.

GHG

The total burner/boiler capacity for the facility is 42.774 MMBtu/hr (20 MMBtu/hr for boiler, 15 MMBtu/hr for dryer, and 7.744 MMBtu/hr for the log shaving dryer. Based on Part 98-Mandatory

Greenhouse Gas Reporting, Subpart C, Table C emission factors, the CO_2e mass equivalent emission factor for these units is 211.14 lb/MMBtu/hr. Based on facility total uncontrolled capacity of 42.774 MMBtu/hr, the CO_2e emissions could be 39.557 tons/yr for all wood combustion units.
There are no applicable GHG permitting requirements.

The wood-fired burners and boiler are not subject to the Standards of Performance for Commercial and Industrial Solid Waste Incinerators (40 CFR Part 60 CCCC or DDDD) since these units are not combusting commercial or industrial waste.

COMPLIANCE PLAN

None at this time.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation[1] (9 VAC_)	Pollutant Emitted (5-80-720 B.)	Rated Capacity (5-80-720 C.)
I-1	Green wood planer	9 VAC 5-80-720 B. 1.	PM	N/A
	Sawmill and wood yard	9 VAC 5-80-720 B. 1	PM	N/A

[1]The citation criteria for insignificant activities are as follows:
9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application
9 VAC 5-80-720 B - Insignificant due to emission levels
9 VAC 5-80-720 C - Insignificant due to size or production rate

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

PUBLIC PARTICIPATION
The proposed permit will be place on public notice in the Charlotte Gazette from May 16, 2012 to June 15, 2012.

The EPA comment period ended on August 20, 2012[2]

Attachment: APG-573: Lumber Kiln Emissions Calculations dated September 30, 2010.

2 The EPA 45 day comment period ended on July 31, 2012. During the comment period EPA provided comments on the draft. The requested changes were made to the draft and submitted to EPA for approval. The changes were approved by EPA on August 20, 2012.